PAN-PACIFIC ENTOMOLOGIST
62(1), 1986, pp. 41–43

Time of Nuptial Flight in Two Ant Species (Hymenoptera: Formicidae)

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Abstract.—A flight of *Myrmecocystus ewarti* was seen near Palm Desert, California, at 1500 on 30 December. It is reported because neither hour nor date has been published for this species; and more important, because this genus varies more than most in flight and worker timing among species. This is the first winter flight record for the genus. Secondly, a flight of *Pogonomyrmex californicus* was seen near Riverside, California, at 1015 on 4 October, surprising because the flights usually occur in June and July.

A single flight of each of two species is reported here: *Myrmecocystus ewarti* Snelling because we are aware of no published record for this species; and *Pogonomyrmex californicus* (Buckley) because it was seen at an unusually late date. *M. ewarti* was observed by JSN and *P. californicus* by ESM.

Myrmecocystus ewarti

The nest was about 8 km north of Palm Desert, California, in a *Larrea-Encelia* desert community. The entrance was a 2 cm hole straight down, in a wash area. The ground had been moist several days before, indicating a previous rain.

The nest was observed several times on 30 December 1983, as noted below. The day was sunny and warm, becoming partly shaded by cloud by 1500 (PST); the temperature at the surface then was 23°C in the sun and 15° in the shade; at 7 cm deep it was 19°.

1415: Passed by nest and noticed nothing.

1500: About 300 workers moving in unusual zigzag pattern within 1-m radius of entrance. About 15 males motionless on pebbles, some taking flight. Four females emerged gradually from nest and were collected.

1600: 20 workers only were left.

Several days later, 3 January 1984, this nest was observed again. The afternoon was clear and sunny, with surface temperature in the sun 24–27°. The ground was now quite dry. No ants were seen at 1445, 1500, or 1550; 2 workers were inside the entrance at 1520. (At a nearby nest of *M. mimicus* 100 workers and 2 males [in the entrance] were seen at 1500.)

The two dates listed by Snelling (1976) when alates of *M. ewarti* have been found in the nest, 26 January and 1 March, are both in the winter like the flight reported here.

Published records of flight time for other species in the genus include *M. men-*

dax, 18 July at 1610 (Wheeler, 1908); *M. mexicanus,* 24–28 July, 1922–1936 (Conway, 1980); *M. mimicus,* July, 1730–1900 and 0600–0700 (Bartz and Hölldobler, 1982); *M. pyramicus,* 7 April, near sundown (Smith, 1951 with Snelling, 1976); *M. testaceus,* early spring and midautumn, late afternoon (Snelling, 1976). A second morning-flying species is *M. depilis,* July, 0600 (G. Alpert, personal communication). Thus there is more spread of both date and hour of flight than for most genera (cf. McCluskey, 1974); and our new record (*M. ewarti*) adds yet another season, winter.

Pogonomyrmex californicus

Published records of date of flight include 27 June–15 July (Michener, 1942) and June–July (Mintzer, 1982). Through the years locally the flights have often been observed (such as collecting the alates for laboratory study, McCluskey and Carter, 1969) from the first of June into August. So imagine my surprise to encounter a flight in the fall. A couple times in preceding days a female had been noticed at a nest, but thought to be merely a straggler left over for some reason.

The nest openings were in a crack of the pavement of a parking lot in Loma Linda (near Riverside, CA), where I passed one or more times a day; the colony had been there for many years. At 1005 on 4 October 1983 I noticed many alate females out. So observations were made as follows:

1010: About 150 females out at three exits, massed in usual way (somewhat in rows around exits); also many workers. No males seen now or later.

1005–1035: Large number continued out, sometimes spreading to a meter beyond exits, both females and workers running excitedly. Several females flew, perhaps one per minute for a while (but could never verify by sighting against sky). A student who stopped by (1015–1020) also said he saw them fly. Sunny and warm (hot sitting in sun) most of time, but dimmed by clouds part of time. Often a breeze. By 1035 number out had dropped to a half or third.

1055: Only 7 females out.

1100: Sun much dimmed by clouds; shade air temperature 24°C.

Between 1035 and 1055: Checked six other nests, mostly in more typical habitat, as along railroad siding. Workers but no alates out. More cloudy by now. Ground wet from heavy rain 30 September.

In conclusion, this report adds another species flight hour and date for a genus that deserves further analysis because of unusual diversity in timing. Secondly, it provides a reminder that variability in biological phenomena within a species should not be overlooked.

ACKNOWLEDGMENTS

We thank R. R. Snelling for determining *M. ewarti,* and the Geoscience Research Institute for grant support.

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